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LIST OF THE FISHES COLLECTED BY MR. W. J. FISHER, UPON THE COASTS OF LOWER CALIFORNIA, 1876-77, WITH DESCRIPTIONS OF NEW SPECIES.

BY W. N. LOCKINGTON.

In April, 1876, the schooner *Harvest Queen*, W. J. Fisher in command, left San Francisco on a collecting expedition to Lower California. The intention was to work down the western coast, and then along the eastern to the head of the Gulf of California; and the object was to collect seals, birds, fishes, mollusks, crustacea, radiates, etc., for sale or exchange.

Financially the expedition proved a signal failure; few skins or shells of value were procured, and most of the former were spoiled before reaching San Francisco; but the scientific results were far from insignificant. Chiefly in consequence of the free use of the dredge in depths under fifteen fathoms, large numbers of small crustacea, many of them new or little known, were procured, also a few rare and three or four new mollusks, and some interesting fishes from the Gulf, the latter mingled with the crustacea and other objects dredged at moderate depths.

Besides these fishes, which will be described in the following pages, several better known species were taken in considerable quantity at Magdalena Bay, upon the Pacific coast of the peninsula.

As these fishes have already formed the subject of two short papers in the Proceedings of the California Academy of Sciences, and one or two were by error described as new, they will be included in the list herein given, with references to my previous papers.

The reptiles obtained were catalogued in the *American Naturalist*, April, 1880, p. 295. Nothing new was found among birds, and the only mammals taken were a fine female Elephant seal (*Morunga proboscidea*), killed at Ascencion Island, on the western coast of the peninsula; several sea-lions (*Eumetopias stelleri*); and the skull of a species of *Orca*.

Diodon maculatus Lac.	Gulf of Cal.
Tetrodon politus Gill.	Magdalena Bay.
Tetrodon punctatissimus? Gunther.	Gulf of Cal.
Antennarius leopardinus Gnthr.	Gulf of Cal.
Hypleurochilus gentilis (Grd.) Gill.	La Paz, Las Animas Bay, Gulf of Cal.
Pholidichthys anguilliformis Locktn.	Gulf of Cal.
Cremnobates altivelis Locktn.	Gulf of Cal.

Clinus phillippi Steind.	Gulf of Cal.
Apodichthys univittatus Locktn.	Gulf of Cal.
Microdesmus dipus Gnthr.	La Paz.
Gobiesox rhessodon Rosa Smith.	Gulf of Cal.
Gillichthys mirabilis Cpr.	Magdalena Bay.
Pimelometopon pulcher (Ayres) Gill.	Magdalena Bay.
Semicossyphus pulcher Locktn. Proc. Cal. Ac. Sci., 1876. p. 87.	
Cynoscion parvipinnis (Ayres) J. & G.	Magdalena Bay.
Menticirrus undulatus (Grd.) Gill.	Magdalena Bay.
Girella nigricans (Ayres) Gill.	Magdalena Bay.
Sparus brachysomus Locktn. Proc. U. S. National Museum, 1880, 283.	Magdalena Bay.
Pristipoma melanopterum Cuv.	Gulf of Cal.
Serranus nebulifer (Grd.) Steind.	Magdalena Bay.
Paralabrax nebulifer Locktn. Proc. Cal. Ac. Sci., 1876, 86.	
Serranus clathratus (Grd.) Steind.	Magdalena Bay.
Serranus maculofasciatus Steind.	Angeles Bay, Gulf of Cal.
Serranus gigas (Ayres) J. & G.	Magdalena Bay.
Centropomus undecimalis Bloch.	Ascencion Island, I. C.
Centropomus viridis Locktn. Proc. Cal. Ac. Sci., 1876, 109.	
Selene vomer (L.) Lütken.	Magdalena Bay.
Argyreiosus pacificus Locktn. Proc. Cal. Ac. Sci., 1876, 84.	
Trachynotus carolinus (L.) Gthr., Cuv. and Val.	Magdalena Bay.
Trachynotus ovatus L. Lae.	Magdalena Bay.
Trachynotus ovatus Locktn. Proc. Cal. Ac. Sci., 1876, 86.	
Trachurus saurus Raf.	Magdalena Bay.
Sphyræna argentea Grd.	Magdalena Bay.
Sphyræna argentea Locktn. Proc. Cal Ac. Sci., 1876, 88.	
Atherinopsis californiensis (Grd.) Gill.	Magdalena Bay.
Myxus harengus Günther.	Las Animas Bay, Gulf of Cal.
Albula vulpes (L.) Goode.	
Albula conorhynchus Locktn., loc. cit. 83.	
Heterodontus francisi (Grd.) J. & G.	Magdalena Bay.
Cestracion francisi Locktn., loc. cit. 85.	
Mustelus hinnulus (Blainville) J. & G.	Magdalena Bay.
Mustelus californicus Locktn., l c. 87.	
Triacis semifasciatus Grd.	Magdalena Bay.
Triacis semifasciata Locktn., l. c. 87.	
Sphyrna zygæna (L.) Raf.	South of Cape St. Lucas.
Branchiostoma lanceolatum (Pallas) Gray.	Angeles Bay, Gulf of Cal.

Tetrodon punctatissimus ? Günther.

Cat. Fish. Brit. Mus., VIII, p. 302, 1870.

D. 9, A. 8, P. 17, C. 2–7, 2.

Body compressed, short; the dorsal profile from tip of snout to eye slightly concave, thence to origin of dorsal gently convex, thence descending moderately, somewhat concave from posterior margin of dorsal to caudal. Abdominal outline slightly concave in front of eye, thence boldly convex to origin of anal, thence corresponding to dorsal outline.

Head $3\frac{1}{4}$ times, greatest depth $2\frac{7}{12}$ in total length, the greatest depth above the centre of the pectoral base; greatest breadth (at gill-openings) less than the length of the head, and $3\frac{9}{14}$ in total length. Snout $1\frac{1}{2}$, eye 4 times in length of head, width of interorbital area about $1\frac{1}{2}$ times the diameter of the eye. Depth of caudal peduncle nearly $2\frac{2}{5}$ times in greatest depth.

The back behind the head forms a keel.

Snout truncate at the tip, concave above and below, higher than wide; nostrils inconspicuous, a single opening on each side on a minute papilla; mouth small; eyes round, lateral, entirely in the posterior half of the head, the upper orbital margins slightly raised, so that the interorbital area is somewhat concave.

Teeth smooth, sharp-edged, line of junction distinct.

Gill-opening small, almost perpendicular, distant from the eye about an eye-diameter.

Dorsal fin arising at a distance from the gill-opening equal to the length of the head, with nine articulated rays, the first simple, the others once or twice divided. Base of dorsal less than one-third of the length of the snout, height rather more than one-third of length of head.

Anal slightly posterior to dorsal, with eight rays, the first vertical with the posterior margin of the dorsal; height and length of base equal to dorsal.

Caudal very slightly convex on posterior margin when opened out, all the principal rays divided, some of the central ones four times; length of fin about $5\frac{1}{2}$ times in total length.

Pectoral base oblique, its upper axil near the upper end of the gill-slit, thence backwards and downwards at an angle of about 45°. Pectoral fin fan-shaped, rather short (the tips of the rays in the specimen are slightly injured), the uppermost ray short, simple; the next (longest) simple; the others once or twice divided, slightly diminishing in length downwards.

Top and sides of head, breast, and abdomen to anal fin with prickly papillæ, most numerous upon the breast and under side of the snout. Rest of body naked.

Color purple, thickly sown with subcircular or subelliptic lighter spots; these become larger upon the flanks, until the ground color fades out, leaving the abdomen, breast, and under side of snout dirty yellow. Spots of sides and upper portion light purplish. Behind the anal fin the spots can be traced all round the body. No color bands or spots are now evident upon the fins. Specimen in alcohol since 1876.

Angeles Bay; Gulf of California.

From *T. furthii*, Steind. (Sitz. Akad. Wiss. Wien, 1876. Icthyol. Beitrage, V., p. 22) this species may readily be distinguished by the great length of the snout, two-thirds of that of the head, while in the *T. furthii* it is only $\frac{2}{5}$–$\frac{4}{11}$ of the head. Other differences are the absence of a skin-fold on the tail, the inconspicuous nasal papilla, and the smaller development of the spinules upon the back. The coloration is also different. *T. furthii* has indistinct transverse bands, and a dark band on the pectoral base

The short description given by Dr. Günther of *T. punctatissimus* agrees, so far as it goes, with the present species. His specimens were from Panama. Should the present species prove distinct, I propose for it the name of *oxyrhynchus*. Length of specimen, 3·06 inches.

Antennarius leopardinus, Gnthr.?

Trans. Zool. Soc., 1864, 15 *i*.
Fishes Cent. Amer. in Trans. Zool. Soc., Vol. VI, 434, Pl. VII.

This species was originally described from Panama.

Two examples were obtained by Mr. Fisher by dredging at a depth of 22 fathoms, among beds of pearl oyster (*Margaritophora*) off San José Island, Amortiguado Bay, Gulf of California. The spots have in most cases faded into light yellow, leaving the bright vermilion of all the rest of the body and fins unchanged. A black spot persists upon the ninth ray of the dorsal, and there are traces of black upon the sides and head. The under side of the abdomen, in advance of the anal, is light yellowish with dark spots. Total length 1·95 inches; width from tip to tip of pectorals 1·70 in.

Cremnobates altivelis, nov. sp.

D. 4-25, A. 21, P. 13, C. 13, V. 2, L. lat. 37.

Body compressed, greatest depth a little behind pectoral axil, greatest thickness at gill-covers, dorsal and abdominal profiles of similar curvature, decreasing regularly to the caudal fin. Profile of occiput and superorbital regions convex; snout somewhat produced, its upper outline slightly concave.

Head one-fourth of total length, greatest depth a little less than length of head, caudal peduncle about one-fourth of the greatest depth.

Eye round, lateral, with a slight direction upwards, its diameter less than the length of the snout. Interorbital area nearly equal in width to the diameter of the eye, concave transversely, upper orbital borders slightly raised.

A short nasal tentacle slightly anterior to the front margin of the eye. A large fimbriated tentacle on each side of the first dorsal ray.

Cleft of mouth oblique, the lower jaw the longer; the posterior convex extremity of the club-shaped maxillary about vertical with the centre of the pupil.

Teeth of the outer row regular, sharp, incurved, the largest in front, gradually decreasing along the lateral portions of the jaws, and not extending much past the middle of their length. A narrow band of small teeth in the rear of the outer row. Vomerine teeth.

Branchiostegals six. Gill-openings continuous, membranes not attached to the isthmus.

Distance from the first ray of the dorsal to the posterior margin of the eye equal to the length of the snout. First two rays of the dorsal much developed, the first slightly the longer, and nearly equal in height to the distance of its base from the tip of the upper jaw; third ray about half the length of the first; fourth very short; succeeding rays to the twenty-sixth longer than the third, the three last somewhat decreasing.

Anal commencing under the eleventh dorsal ray; coterminous with, and equal in height to the dorsal.

Caudal with thirteen simple jointed rays, the longest in the centre, posterior margin convex.

Pectorals narrow, lanceolate, the fifth and sixth rays longest, and four-fifths the length of the head.

Ventrals inserted in advance of the pectorals.

Lateral line with thirty-seven simple pores, parallel with dorsal outline to opposite the origin of the anal, where it is deflected almost perpendicularly downward to the middle of the side of the body, along which it continues to its termination.

Scales rather large, about ten in a transverse row in the central part of the body, their posterior margin membranous. No scales on fins.

A line of pores around the margin of the orbit, another along the posterior margin of the pre-operculum, connected to each other and to the lateral line by a line from the centre of the hinder border of the eye.

Color (in alcohol) bright pink above, becoming dusky below, under side of head light olivaceous, lower lip blackish. Dorsal pink, dusky on its margin, a black spot on the fourth ray, and another on its hinder part upon the 24–25th rays, the latter spot extending on to the body. Membrane of anal black. Occipital tentacles black.

Total length 1·9 inch. A single specimen from La Paz, dredged at a depth of 22 fathoms.

This species may be distinguished from *C. monophthalmus*, Gnthr., by the much greater development of the first two dorsal rays; by the longer and concave snout, and by the coloration; and from *C. marmoratus*, Steind. (Sitz. Akad. Wiss., Wien, 1876, 174), by its more elongate form, shorter cleft of mouth, and longer first dorsal ray. In *C. marmoratus* the second dorsal ray is longest.

Pholidichthys anguilliformis nov. sp.

Body exceedingly elongate, much compressed, naked, upper profile of head forming a continuous convex curve to the tip of the snout, which is about equal in length to the eye,

Head six and two-fifths, greatest depth sixteen times in total length.

Eye lateral, round; interorbital space about two-thirds of the diameter of the eye, convex transversely.

Posterior extremity of maxillary vertical with the hinder margin of the eye. Tip of snout a little below the level from the centre of the eye; mouth moderately oblique, lower jaw slightly the longer. Teeth of lower jaw in a close-set row, the largest in front, diminishing along the sides. Teeth of upper jaw similar but smaller. Palate smooth.

Vertical fins continuous but distinct, dorsal entirely spinous, anal commencing a little behind the middle of the entire length of the fish. Ventrals two-rayed, very slightly in advance of the pectorals, which are about equal in length to the distance of their base from the eye.

Color (in spirits) dark blackish brown, mingled with white upon top, sides and lower parts of head. Interorbital area and top of snout white.

A single specimen dredged off San Josê Island, Amortiguado Bay, Gulf of California. Total length 1·60 in. Head 0·25 in.

The example is broken across, the branchiostegals are defective, the caudal fin broken, and some fin-rays missing, so that the fin formula cannot be accurately given. The dorsal fin has above sixty rays. The body is much more slender than that of *P. leucotænia* Bleeker, and there is no trace of the longitudinal bluish white band of that species.

Apodichthys univittatus, nov. sp.

D. circa 95. A. ca. 1–40.

Body elongate, much compressed, band-like, preserving almost the same depth to about the posterior fifth of the body, thence tapering more rapidly to the caudal fin.

Head seven, depth nearly ten times in the total length; depth of caudal peduncle about one-half of that of body.

Snout obtuse, about two-thirds as long as the diameter of the eye, the upper profile of the head a continuous curve from snout to occiput. Interorbital area highly convex transversely, about equal in width to half the diameter of the eye. Eye entirely lateral, round, contained entirely in the anterior half of the head; iris golden.

Mouth small, the posterior extremity of the maxillary reaching to the anterior margin of the eye. Teeth small.

Branchiostegals five.

Dorsal fin continuous with but distinct from the anal, arising vertically above the tip of the operculum, and composed of spines only. Anal preceded by a long, sharp, slender spine of V-shaped transverse section, the hollow side anterior, the length of the spine equal to about half the depth of the fish. Distance from anal spine to tip of operculum a little more than to tip of caudal. Caudal with numerous accessory rays, so that its sides are almost straight, posterior margin broken in specimen, all the rays simple.

General color (in spirits) light reddish, the vertical fins rather bright, and the top of the head reddish brown. Tip of snout brown. A silvery band (possibly bluish in life) from the tip of the snout, across the lower part of the eye, cheeks and opercles, terminating at about the middle of the length of the operculum; this band bordered above by a narrower brown band.

A single specimen. Lower California, probably from the Gulf.

Length 1·88 in. Length of head 0·27 in. Greatest depth 0·19 in. Snout to anal spine 1·10 in.

The peculiar vitta upon each side of the head at once distinguishes this species from the two other described forms.

Microdesmus dipus, Günther.

Trans. Zool. Soc., 1864, p. 26.

A single specimen of this rare species was obtained at La Paz, near low-tide level.

Hemiramphus unifasciatus, Ranzani.

D. 14. A. 16.

With some hesitation I refer two specimens taken in Las Animas Bay, Gulf of California, to this species rather than to *H. rosæ* J. & G. The proportion of the jaw to the length of the body, as well as the number of dorsal rays, agree with *unifasciatus*.

On each side of the median line of the back a row of elongated spots of dark greenish tint, one on each scale, forms a narrow band, and between these bands is a median series of dark spots formed by thickly aggregated black dots. Between the narrow dark-green band and the lateral band similar close aggregations of dark spots form a series of spots, elongated transversely. The silvery lateral band is bordered above by a narrower greenish stripe.